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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Defense Logistics Agency	Date: February 2018
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0708011S / <i>Industrial Preparedness</i>											
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	131.718	15.984	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	147.702
0: <i>Prior Years</i>	109.875	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	109.875
17: <i>Improving Industrial Base Manufacturing Processes (formerly Material Availability)</i>	5.293	4.800	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	10.093
18: <i>Maintaining Viable Supply Sources (formerly High Quality Sources)</i>	10.188	8.590	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.778
19: <i>Improving Technical and Logistics Information (formerly Industry and Customer Collaboration)</i>	6.362	2.594	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	8.956

A. Mission Description and Budget Item Justification

The Defense Logistics Agency (DLA) Industrial Preparedness Manufacturing Technology (IP ManTech) Program supports the development of a responsive, world-class manufacturing capability to affordably meet the warfighters' needs throughout the defense system life cycle. IP ManTech: Provides the crucial link between invention and product application to speed technology transitions. The program matures and validates emerging manufacturing technologies to support low-risk implementation in industry and Department of Defense (DoD) facilities, e.g. depots and shipyards. It addresses production issues early by providing timely solutions, thereby reducing risk and positively impacting system life cycle affordability by providing solutions to manufacturing problems before they occur.

Beginning in FY16, DLA ManTech was realigned into three Strategic Focus Areas (SFA): 1) Improving Industrial base Manufacturing Processes; 2) Maintaining Viable Sources of Supply; and 3) Improving Technical and Logistics Information.

- The Improving Industrial Base Manufacturing Processes SFA includes efforts to reduce industrial base material costs and production lead-times, while improving the quality of DLA managed products. This SFA subsumed the former supply chain oriented efforts in Subsistence Network (formerly known as the Combat Rations Network for Technology Implementation), Procurement Readiness Optimization—Advanced Casting Technology (PRO-ACT), Procurement Readiness Optimization—Forging Advance System Technology (PRO-FAST), and Battery Network (BATTNET). New manufacturing processes within the scope of this SFA include emerging technologies such as Additive Manufacturing.
- Maintaining Viable Supply Sources includes efforts to assure the commercial industrial base can satisfy DLA materiel requirements. This SFA subsumed the Material Acquisition Electronics ManTech efforts. In the future, it will include other DLA efforts to maintain a viable industrial capability in areas such as Strategic Materials.
- The Improving Technical and Logistics Information SFA include efforts to improve and facilitate the exchange of engineering and logistics information among DLA industry partners and customers. It includes the MANTECH program Military Uniform System Technology (MUST) (formerly known as Customer Driven Uniform

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Manufacturing) and the Defense Logistics Information Research Program from P.E. 0603712S. A primary focus of this SFA is to capitalize on the emerging “Model Based Enterprise” paradigm and the semantic web as an enabler to a logistics system that is smart and connected.

NOTE: The single supply chain exhibits were removed as they are now included within the SFA exhibits.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	15.984	0.000	0.000	-	0.000
Total Adjustments	15.984	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	15.984	-			
• SBIR/STTR Transfer	-	-			

Change Summary Explanation

Under the FY2017 CR, PE 30603680S was considered a new start so ManTech business was executed under this PE resulting in a reprogramming amount of \$15.984M. See PE 30603680S for data.

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Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0708011S / Industrial Preparedness				Project (Number/Name) 0 / Prior Years			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
0: Prior Years	109.875	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	109.875
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Prior Year includes:

-Combat Rations (CORANET): \$6.632M. This project was realigned to Strategic Focus Area (SFA) Improving Industrial Base Manufacturing Processes. In 2015, DLA R&D expanded the Combat Rations Network (CORANET) program to include the "Subsistence Supply Chain (SUBNET)," which consists of the supply chain for military subsistence, including combat rations, field feeding equipment, garrison feeding and "market fresh." The goal of the SUBNET program is to maximize the capability and the capacity to produce and to encourage innovation and modernization needed to leverage the latest technologies.

-Customer Driven Uniform Manufacture (CDUM): \$18.499M. This project was realigned to SFA Improving Technical and Logistics Information. The CDUM program concluded in October 2014, and the results have been implemented DOD wide for recruit items. Residual CDUM projects have been transitioned into the Military Unique Sustainment Technology (MUST) Program. The MUST Program was initiated in 4th quarter 2014. The strategic objective of the DLA MUST program is to identify, develop and adopt technologies that can significantly reduce the lead-time between Individual Item and Equipment (IIE) development and sustainment from years to months. The Program focuses on technologies that will transform the military IIE supply chain from an "electronic paper" (i.e. PDF/MS Word) based, manual environment into a knowledge based automated environment. The resulting approach will be a neutral platform that will seamlessly communicate military unique technical requirements throughout the end to end supply chain.

-Procurement Readiness Optimization - Advanced System Technology (PRO-ACT): \$12.409M. This project was realigned to SFA Improving Industrial Base Manufacturing Processes. The Castings consortium objective is to develop new materials and technologies for the metalcasting industry to help DLA improve the supply of parts that contain castings. Weapon system spare parts managed by DLA that contain castings are responsible for a disproportionate share of DLA's backorders or unfilled orders (UFOs). Cast parts are ~2% of National Stock Numbered Class IX parts but represent ~5% of all backorders, and when only the oldest backorders are considered up to 10% are castings. This program includes tasks to develop new capabilities in the areas of inspection, materials, processes, modeling, and design. Once developed these capabilities will support the foundry industry, where the technologies will be tested and implemented in conjunction with the industry associations. These advancements will improve the metal casting supply chains for the DOD and the DLA to better support the warfighter. This is achieved through investments in projects aimed at reducing lead-time, reducing cost, and improving quality of castings critical to DOD weapon systems. The increase in funding will help develop new technology for casting suppliers, including inspection, materials, modeling, and design.

-Procurement Readiness Optimization - Forging Advanced System Technology (PRO-FAST): \$5.627M. This project was realigned to SFA Improving Industrial Base Manufacturing Processes. The Forgings consortium objective is to develop new materials and technologies for the forging industry to help DLA improve the supply of parts that contain forgings. Weapon system spare parts managed by DLA that contain Forgings are responsible for a disproportionate share of DLA's backorders or unfilled orders (UFOs). Forged parts are ~2% of National Stock Numbered Class IX parts but represent ~5% of all backorders, and when only the oldest backorders are considered up to 10% are forgings. This program includes tasks to develop new capabilities in the areas of inspection, materials, processes, modeling, and design. Once developed, these capabilities will support the forging industry, where the technologies will be tested and implemented in conjunction with the industry associations.

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Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0708011S / <i>Industrial Preparedness</i>	Project (Number/Name) 0 / <i>Prior Years</i>
<p>These advancements will improve the forging supply chains for the DOD and the DLA to better support the warfighter. This is achieved through investments in projects aimed at reducing lead-time, reducing cost, and improving quality of forgings critical to DOD weapon systems. The increase in funding will help develop new technology for forging suppliers, including new methods for making forge dies (typically the longest lead time and most expensive item) and for simulation of metal flow inside the forge die (to eliminate trial and error development of the die).</p> <p>-Material Acquisition Electronics (MAE): \$58.396M. This project was realigned to SFA Maintaining Viable Supply Sources. The MAE program develops a capability to emulate most obsolete digital integrated circuits (ICs) in the Federal catalog using a single, flexible manufacturing line. DoD has estimated \$2.9 billion is spent every five years redesigning circuit card assemblies. Many of these circuit card redesigns are performed to mitigate IC obsolescence. Commercial ICs have short Product Life Cycles (often only 18 months). IC Manufacturers subsequently move on to later generations of ICs, leaving little to no sources for their previous IC products. DoD maintains weapons systems much longer than IC lifecycles, resulting in an obsolescence problem. In order to avoid costs and potential readiness issues associated with buying/carrying excess inventories acquired before commercial availability ceases, or redesigning the next higher assembly to mitigate the obsolete IC, DLA (as the manager of 88% of the IC Federal Stock Class) must have the capability to manufacture needed IC devices.</p> <p>-Battery Network (BATNET): \$8.312M. This project was realigned to SFA Improving Industrial Base Manufacturing Processes. The BATNET program is focused on improving the supply and reducing the cost of procured batteries used in fielded weapon systems such as communication radios and armored vehicles. Batteries exhibit dynamic challenges for military logistics. BATNET is a community of practice of battery supply chain members, engineering support activities, researchers, and users. BATNET conducts R&D to address sustainment gaps and bridge technical solutions into higher MRLs for specific groups of batteries. For FY2014, DLA received 139,163 orders for 2.85 million batteries at \$183M net value - compared to FY13 \$176M and FY12 \$216M.</p>		

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Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0708011S / Industrial Preparedness				Project (Number/Name) 17 / Improving Industrial Base Manufacturing Processes (formerly Material Availability)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
17: Improving Industrial Base Manufacturing Processes (formerly Material Availability)	5.293	4.800	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	10.093
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Material Availability (MA) Strategic Focus Area (SFA) are R&D efforts undertaken with DLA's industrial base to reduce material costs, reduce the length and variability of Production Lead-Times, assure the DLA managed products meet requirements, and continuously improve quality and reliability. Benefits of this SFA include lower material costs, lower inventory levels and more predictable Customer Wait Times, fewer quality deficiencies, and lower customer support costs. This strategic focus area includes within its scope the former Combat Rations Program, the Battery Program, the Castings and the Forgings programs.

This SFA is comprised of five roadmaps for Batteries, Subsistence Network, Castings, Forgings, and Additive Manufacturing.

The Battery network objective is to develop the next generation of battery manufacturing technologies for cost and price efficiency, longer shelf life, and lighter batteries with higher energy. The network conducts R&D initiatives to address sustainment gaps and bridge technical solutions into higher MRLs for specific groups of batteries. For FY2014, DLA received 139,163 orders for 2.85 million batteries at \$183M net value - compared to FY13 \$176M and FY12 \$216M. The Battery network focuses on projects to develop the production capability for advanced lithium-based non-rechargeable and rechargeable batteries to ensure the prompt and sustained availability, quality, and affordability of batteries. Desired outcomes include: streamlined inventory and associated cost reductions through standardization and improved distribution practices; resolved obsolescence issues; addressed surge and sustainment issues; enhanced security of supply chain; increased competition and manufacturing base; reduced per unit battery cost; and leveraged Service-level (Army, Navy, Air Force) and other governmental (DOE, DOT, NASA) R&D efforts to insert new technology and practices into the existing DLA battery inventory.

The Subsistence Supply Chain consists of military subsistence, which includes combat rations, field feeding equipment, garrison feeding and market fresh products. The Subsistence Network (SUBNET) program is a manufacturing technology program and is the successor to the Combat Rations R&D program. SUBNET's community of practice will research and promote manufacturing improvements in the subsistence supply chain with the goals of maximizing capability and capacity to produce, and to encourage innovation and modernization needed to leverage the latest technologies. The desired outcomes of the current short-term projects Microwave Assisted Thermal Sterilization (MATS), MRE Alternate Chemical Laminates, Optimize Combat Ration Inspection Costs, and Combat Rations Shelf Life Temperature Monitoring Project include testing of low risk, high-impact technology and process improvements that will improve the quality of individual and group combat rations, reduce cost, and provide efficiencies, then transitioning these improvements to industrial base suppliers and government suppliers.

The Castings consortium objective is to develop new materials and technologies for the metalcasting industry to help DLA improve the supply of parts that contain castings. Weapon system spare parts managed by DLA that contain castings are responsible for a disproportionate share of DLA's backorders or unfilled orders (UFOs).

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Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0708011S / <i>Industrial Preparedness</i>	Project (Number/Name) 17 / <i>Improving Industrial Base Manufacturing Processes (formerly Material Availability)</i>
<p>Cast parts are ~2% of National Stock Numbered Class IX parts but represent ~5% of all backorders, and when only the oldest backorders are considered up to 10% are castings. This program includes tasks to develop new capabilities in the areas of inspection, materials, processes, modeling, and design. Once developed these capabilities will support the foundry industry, where the technologies will be tested and implemented in conjunction with the industry associations. These advancements will improve the metalcasting supply chains for the DOD and the DLA to better support the warfighter. This is achieved through investments in projects aimed at reducing lead-time, reducing cost, and improving quality of castings critical to DOD weapon systems.</p> <p>The Forgings consortium objective is to develop new materials and technologies for the forging industry to help DLA improve the supply of parts that contain forgings. Weapon system spare parts managed by DLA that contain Forgings are responsible for a disproportionate share of DLA's backorders or unfilled orders (UFOs). Forged parts are ~2% of National Stock Numbered Class IX parts but represent ~5% of all backorders, and when only the oldest backorders are considered up to 10% are forgings. This program includes tasks to develop new capabilities in the areas of inspection, materials, processes, modeling, and design. Once developed these capabilities will support the forging industry, where the technologies will be tested and implemented in conjunction with the industry associations. These advancements will improve the forging supply chains for the DOD and the DLA to better support the warfighter. This is achieved through investments in projects aimed at reducing lead-time, reducing cost, and improving quality of forgings critical to DOD weapon systems.</p> <p>The Additive Manufacturing (AM) objective is to establish AM as an effective alternative to conventional manufacturing and document the process for AM benefits. DLA needs to exploit AM technology as a lead-time and inventory reduction enabler.</p>		

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Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0708011S / Industrial Preparedness				Project (Number/Name) 18 / Maintaining Viable Supply Sources (formerly High Quality Sources)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
18: Maintaining Viable Supply Sources (formerly High Quality Sources)	10.188	8.590	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.778
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The High Quality Sources SFA are projects undertaken to assure that the industrial base can respond to DLA requirements and DLA can fill military customers' material requirements reliably and consistently. Benefits include eliminating cancelled requisitions returned to customers as "non-procurable." This strategic focus area includes within its scope the former Material Acquisition Electronics program.

The Material Acquisition Electronics roadmap has four major thrusts in Digital Microcircuits: Advanced Schottky TTL, TTL Compatible CMOS, 512 Kilobit RAM/ROM and Mega Gate ASIC. The Roadmap also includes a new major thrust area: Linear Microcircuits. Over the past several years, obsolescence in this class of microcircuits has greatly increased and has become a significant concern. These are classes of microcircuits that are expected to become non-procurable in FY 17 and beyond. Without the technologies planned on the MAE Roadmap, DLA will not be able to support DoD's requirements for high quality spare parts for critical electronic systems and subsystems.

The Strategic Materials roadmap is a new thrust for the DLA Mantech program. It is designed to ensure that critical strategic materials are available from domestic sources and that process innovations are in place to efficiently process or recover strategic materials. Domestic capabilities can enhance national security and potentially reduce Defense Stockpile requirements.

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Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0708011S / Industrial Preparedness				Project (Number/Name) 19 / Improving Technical and Logistics Information (formerly Industry and Customer Collaboration)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
19: Improving Technical and Logistics Information (formerly Industry and Customer Collaboration)	6.362	2.594	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	8.956
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Improving Technical and Logistics Information Strategic Focus Area (SFA) projects improve and facilitate the communication of technical and logistics information among industry, DLA's military customers and DLA. This SFA includes Military Unique Sustainment Technology (MUST) and the Defense Logistics Information Research (DLIR) (P.E. 0603712S) within its scope. The movement of the DLIR related work from P.E. 0603712S to the DOD ManTech Program aligns the funding to the critical interface between DLA and industry and away from internal DLA operations.

The MUST focus addresses GAO Report 12-707 recommendations that DOD to establish a "knowledge-based approach" to collaborate on define and communicate of military unique requirements. DLA has the responsibility to communicate and manage the technical requirements among the Services and the Defense Industrial Base. Currently there is no common environment for collaborating on new requirements among the stakeholders. The strategic objective of the DLA MUST program is to identify, develop and adopt technologies that can significantly reduce the lead-time between Individual Item and Equipment (IIE) development and sustainment from years to months. The Program focuses on technologies that will transform the military IIE supply chain from an "electronic paper" (i.e. PDF/MS Word) based, manual environment into a knowledge based automated environment. The resulting approach will be a neutral platform that will seamlessly communicate military unique technical requirements throughout the end to end supply chain.

The DLIR Model Based Enterprise effort will develop capabilities to systematically accept engineering and design data from the Military Services, validate and store item technical data in 3D models. There are two classes of data that must be addressed: newly designed parts for systems still in development and legacy parts for systems that are in sustainment. The problem with newly designed parts is capturing the complete and accurate designs. The legacy parts do not have digital engineering models which recreating the design in contemporary engineering systems.

The Technical and Logistical Data Interoperability will pioneer methods to capture data from military Services, Original Equipment Manufacturers (OEMs), and suppliers to form a seamless thread of interoperable and linked data models.